



Instructional Services

*presents*

## PubMed Searching Guide

<http://nihlibrary.nih.gov/pubmed.htm>

**Training Schedule:** <http://nihlibrary.nih.gov/seminars/seminarschedule.htm>

### Course Objectives

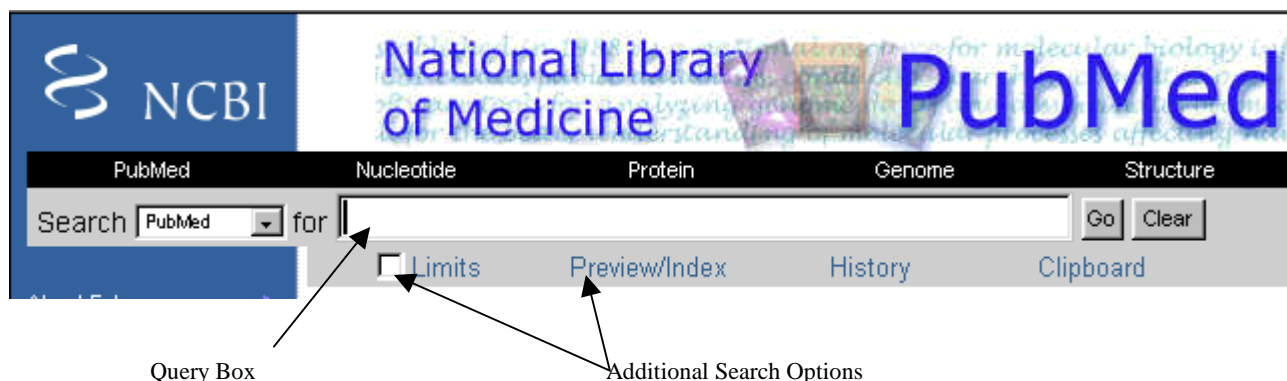
1. Find references on a specific topic, by a specific author or in a specific journal
2. Apply limits such as language, age groups and publication type to search results
3. Use LinkOut while you search to obtain the actual article from select journals
4. Use MeSH (**M**edical **S**ubject **H**eadings) Browser to identify indexing terms
5. Use Single Citation Matcher to verify a reference
6. Order photocopies of articles from the NIH Library using PubMed's LoansomeDoc

### PubMed Description

The PubMed search system provides access to the PubMed database of bibliographic information, which is a compilation of the National Library of Medicine's (NLM) MEDLINE, PreMEDLINE and HealthSTAR as well as publisher-supplied citations. MEDLINE is NLM's premier database covering the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences.

### Searching PubMed

To search PubMed, enter search terms in the query box. The Features bar directly beneath the query box provides access to additional search options, Limits and Index. Also, available from the Features bar are the History and Clipboard for use with your search results. The PubMed query box and Features bar are available from every screen. You do not need to return to the homepage to enter a new search.



## Search Options

### Limiting

Click on “Limits” in the Features bar under the search box to be able to limit your search to specific [age group](#), [gender](#), or [human or animal](#) studies.

PubMed Nucleotide Protein Genome Structure Pop

Search PubMed for  Go Clear

**Limits** Preview/Index History Clipboard

- Use All Fields pull-down menu to specify a field
- Boolean operators AND, OR, NOT must be in upper case
- If search fields tags are used enclose in square brackets, e.g., rubella [ti]
- Search [limits](#) may exclude PreMEDLINE and publisher supplied citations

**Limited to:**

All Fields ☐ only items with abstracts

Publication Types Languages Subsets

Ages Human or Animal Gender

Entrez Date

Publication Date From    To

Use the format YYYY/MM/DD; month and day are optional.

“Limits” also allows you to restrict to articles published in a specific [language](#), and to specific [types of articles](#) such as review articles. You can limit by either [Entrez or Publication Date](#). And lastly, you may limit your retrieval to a specific subset of citations within PubMed, such as AIDS-related citations or in process citations, i.e., PreMEDLINE.

A check mark in the box next to Limits indicates if limits have been selected. If you select a limit and run a search, the limits in effect will appear in a yellow bar above the Display button when viewing search results. To turn off the limits before you run your next search, click on the box to remove the check.

PubMed Nucleotide Protein Genome Structure

Search PubMed for  Preview Go Clear

☒ **Limits** Preview/Index History Clipboard

### Using Preview/Index

Use the Preview/Index feature to:

- Preview the number of search results before displaying the citations.
- Build search strategies by adding one or more terms one at a time.
- Add terms to a strategy from specific search fields.

- View and select terms from the Index to build search strategies.
- View your search strategy as you continue to refine your search.

1. Click on “PreviewIndex.”

The screenshot shows the top of the PubMed search interface. At the top, there are tabs for 'PubMed', 'Nucleotide', 'Protein', 'Genome', and 'Structure'. Below these is a search bar with a dropdown menu set to 'PubMed' and a 'for' label. To the right of the search bar are buttons for 'Preview', 'Go', and 'Clear'. Below the search bar is a row of tabs: 'Limits' (with a checkbox), 'Preview/Index' (selected), 'History', and 'Clipboard'.

2. Choose an index field to be searched by clicking on the down arrow in the box that says “All Fields” i.e. “MeSH terms.”

This screenshot shows the 'MeSH Terms' dropdown menu open, displaying a list of search fields. The 'MeSH Terms' option is highlighted. The search bar contains the text 'thiamine'. The 'View Index' button is visible. The background shows the 'Preview/Index' tab and the 'History' and 'Clipboard' tabs.

3. Type term in the box, i.e. “thiamine.” Click “View Index” button.

4. Highlight the term to be searched by clicking on it in the display box.

This screenshot shows the search results for 'thiamine'. The 'MeSH Terms' dropdown menu is open, and 'thiamine(5714)' is highlighted. The 'View Index' button is visible. The background shows the 'Preview/Index' tab and the 'History' and 'Clipboard' tabs. The search bar contains the text 'thiamine'.

5. To paste the term into the search box, click one of the Boolean operand buttons (AND, OR, NOT).
6. To perform the search, click on "Go". To see a preview of search results, click on "Preview".
7. To add another term (that will be combined with the previous term according to which button you clicked in step 6), repeat steps 3 – 6.

PubMed Nucleotide Protein Genome Structure PopSet

Search PubMed for "thiamine"[MeSH Terms] Preview Go Clear

☒ Limits Preview/Index History Clipboard

- Enter terms and click Preview to see only the number of search results
- To combine searches use # before search number, e.g., (#2 OR #3) AND asthma

Search	Most Recent Queries	Time	Result
#2	Search "thiamine"[MeSH Terms] Limits: All Adult: 19+ years, English, Review	09:46:23	<a href="#">28</a>
#1	Search "thiamine"[MeSH Terms]	09:45:16	<a href="#">5714</a>

**Add Term(s) to Query or View Index:**

- Enter a term in the text box; use the pull-down menu to specify a search field
- Use AND, OR, NOT to add the term from the text box, or selections from the Index
- Multiple terms selected from Index will be ORed; click AND to add to search

MeSH Terms for diet View Index

diet(82688) Up

diet/adverse effects(2925)

8. When you have selected/combined all terms, click "Go" to perform your search.

PubMed will display your search results: the query box displays your search terms as you entered them. Add or eliminate terms in the query box to modify your current search, or use "Details." If you applied **Limits**, there will be a check in the box next to and a listing of your limit selections will display, e.g., Limit: **All Adult:19+ years, English, Review**. To turn off the existing limits, click on the check-box to remove the check before running your next search.

PubMed Nucleotide Protein Genome Structure

Search PubMed for "thiamine"[MeSH Terms] AND "diet"[MeSH Terms] Go Clear

☒ Limits Preview/Index History Clipboard

**Limits: All Adult: 19+ years, English, Review**

Display Summary Save Text Order Details Add to Clipboard

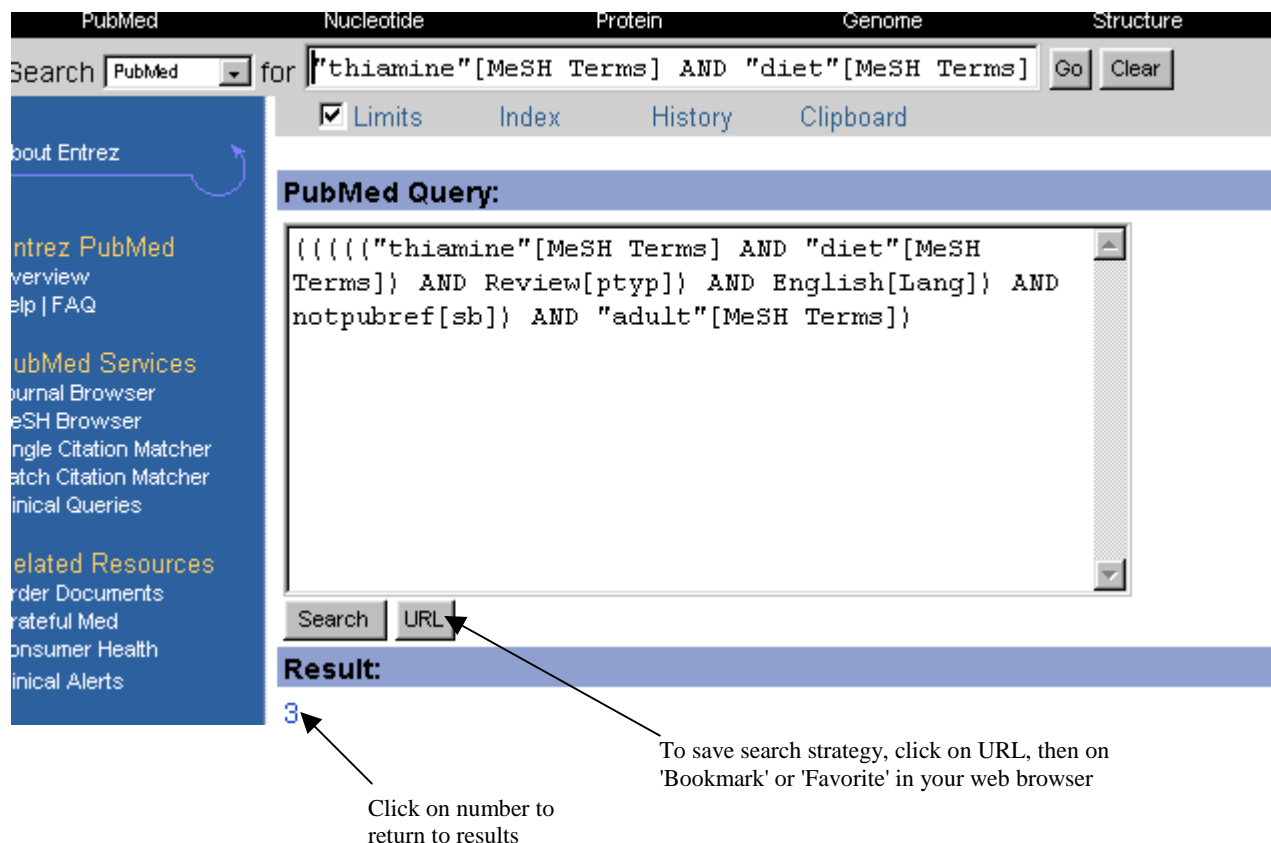
Show: 20 Items 1-3 of 3

☐ 1 : [Baum RA, Iber FL.](#)  
Thiamin--the interaction of aging, alcoholism, and malabsorption in various populations. World Rev Nutr Diet. 1984;44:85-116. Review. No abstract available.  
PMID: 6089450; UI: 84302268

☐ 2 : [Iber FL, Blass JP, Brin M, Leevy CM.](#)  
Thiamin in the elderly--relation to alcoholism and to neurological degeneration. Am J Clin Nutr. 1982 Nov;36(5 Suppl):1067-82. Review.

## Details

Details lets you view your search strategy as it was translated using PubMed's [search rules and syntax](#). From Details, you can also [save the search strategy](#) or edit the search strategy and resubmit it. Details also contains error messages and notes. The Result number is a hyperlink displays the total number of matches for the current search. To return to the current search results screen, click this link or use the "Back" function of your Web browser.



## Saving a Search Strategy from Details

Use the "URL" button to display the current search strategy as a URL and then bookmark the URL for future use as a current awareness search. To do this:

1. Click on "URL." PubMed will return to the search results screen. The translated search strategy will be displayed in the query box and this search strategy will also be embedded as part of the URL.
2. Next, use your Web browser's bookmark function to save the URL as a bookmark (Netscape) or favorite (Internet Explorer).

## Executing a Saved Search

1. Open your browser.
2. Execute the search weekly or monthly by opening the bookmark or favorite.

## History

PubMed will hold all your search strategies and results in "History." The History is only available after you run your first search. The History lists and numbers your searches in the order in which you run

them. The History screen displays your search query, the time of search, and the number of citations in your results. To view the results from a search, click on the number of results.

You can combine searches or add additional terms to an existing search by using the pound sign (#) before the search number, e.g., #2 AND #6, or #3 AND drug therapy. Once you have entered a revised search strategy in the query box, click Go to view the search results. To view the History after running a new search, click History from the Features bar. Click Clear History to remove all searches from the History screen.

#### Notes:

1. The maximum number of queries held in History is 100. Once the maximum number is reached, PubMed will remove the oldest search from the History to add the most current search.
2. The Search History will be lost after one hour of inactivity on PubMed or any of the other Entrez databases.
3. PubMed will move a search statement number to the top of the History if the new search is the same as a previous search.
4. A separate Search History will be kept for each of the Entrez databases although the search statement numbers will be assigned sequentially for all databases.

The screenshot shows the PubMed History screen. At the top, there are tabs for different Entrez databases: PubMed, Nucleotide, Protein, Genome, Structure, and PopSet. Below these is a search bar with the query "thiamine"[MeSH Terms] AND "diet"[MeSH Terms] and buttons for Go and Clear. Below the search bar are tabs for Limits, Preview/Index, History, and Clipboard. The History tab is selected, showing a list of search queries. The first query is "#2 Search 'thiamine'[MeSH Terms] AND 'diet'[MeSH Terms] Limits: All Adult: 19+ years, English, Review, Human" with 3 results. The second query is "#1 Search 'thiamine'[MeSH Terms] AND 'diet'[MeSH Terms] Limits: All Adult: 19+ years, English, Human" with 99 results.

Search	Most Recent Queries	Time	Result
#2	Search "thiamine"[MeSH Terms] AND "diet"[MeSH Terms] Limits: All Adult: 19+ years, English, Review, Human	13:21:18	<a href="#">3</a>
#1	Search "thiamine"[MeSH Terms] AND "diet"[MeSH Terms] Limits: All Adult: 19+ years, English, Human	13:21:07	<a href="#">99</a>

#### Viewing Citations

To view citations with abstracts, choose "Abstract" from the drop down box, then click "Display."

The screenshot shows the PubMed search results page. At the top, there are tabs for different Entrez databases: PubMed, Nucleotide, Protein, Genome, and Structure. Below these is a search bar with the query "thiamine"[MeSH Terms] AND "diet"[MeSH Terms] and buttons for Go and Clear. Below the search bar are tabs for Limits, Preview/Index, History, and Clipboard. The Limits tab is selected, showing the limits: All Adult: 19+ years, English, Review, Human. Below the limits are buttons for Display, Summary, Save, Text, Order, Details, and Add to Clipboard. The Display button is clicked, showing a dropdown menu with options: Summary, Brief, Abstract, Citation, MEDLINE, ASN.1, Link Out, Related Articles, Protein Links, Nucleotide Links, Popset Links, Structure Links, and Genome Links. The Abstract option is selected. Below the dropdown menu is a list of citations. The first citation is "1: Ba... Th... Wor... PM... 268" and the second is "2: lbe... Leevy CM...".

List of different display formats for viewing citations

L:\Teams\In...

## Printing Citations

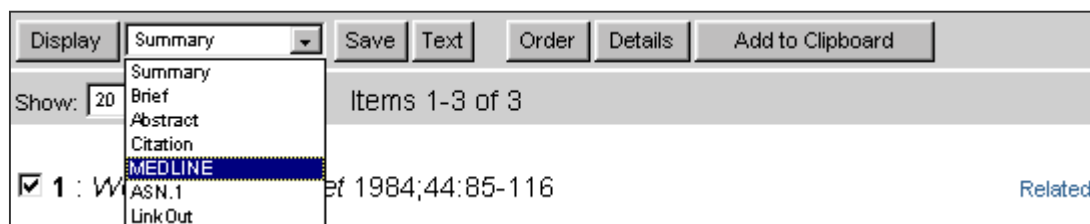
To print citations, use your browser's print function to print the page.

## Saving Citations

To save citations, click the "Save" button. A dialog box will appear for you to indicate the drive, path and name for the file.

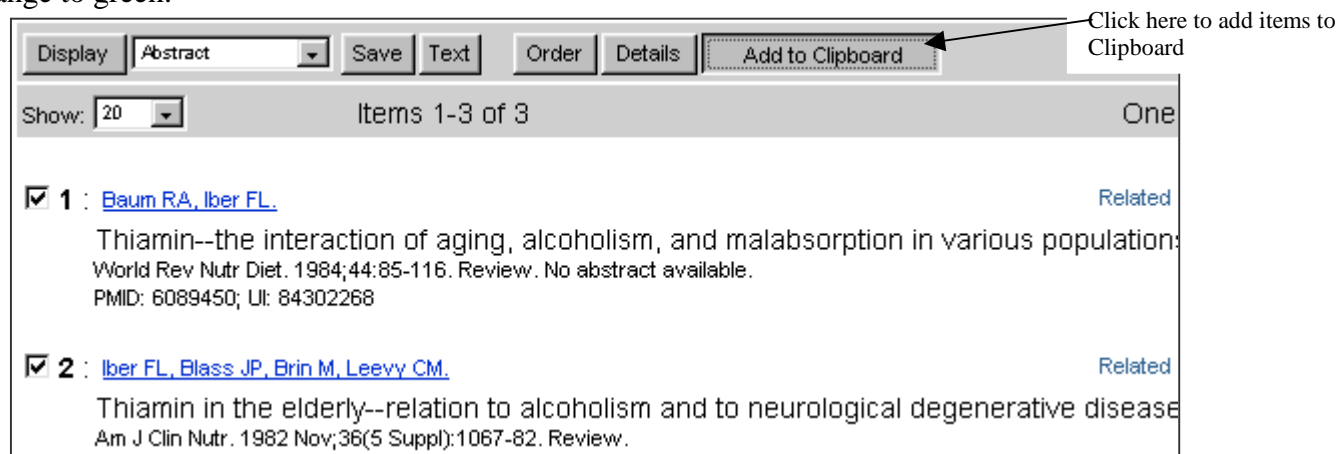


For downloading into bibliographic management software, select "MEDLINE" format which will tag the fields within the citation, then click "Save."



## Add to Clipboard

You may hold citations from several searches in one place temporarily until you print, save, or order them. Mark citations by clicking in the box to the left, then click "Add to Clipboard" (if you don't mark individual citations, the system will add all search results to the clipboard). The maximum number of items that can be placed in the Clipboard is 500. (The Clipboard will be cleared after one hour of inactivity.) Once you have added a citation to the Clipboard, the record number color will change to green.





If you would like document delivery of articles, click “order” to request citations via the **Loansome Doc** service. If you have not registered for Loansome Doc, please do so at [http://nihlibrary.nih.gov/Forms/LoansomeDoc\\_Form.html](http://nihlibrary.nih.gov/Forms/LoansomeDoc_Form.html). Limit of 10 document orders per day.

The screenshot shows a PubMed search results interface. At the top, there are buttons for 'Display', 'Abstract', 'Save', 'Text', 'Order', 'Details', and 'Add to Clipboard'. Below these, it says 'Show: 20' and 'Items 1-3 of 3'. Two search results are listed, each with a checkbox and a link to the article. The first result is by Baum RA, Iber FL, titled 'Thiamin--the interaction of aging, alcoholism, and malabsorption in various populations.' The second result is by Iber FL, Blass JP, Brin M, Leevy CM, titled 'Thiamin in the elderly--relation to alcoholism and to neurological degenerative disease.' A callout box points to the 'Order' button with the text: 'Click on Order to request copies of citations via Loansome Doc'.

## Other PubMed Services

### MeSH Browser

This Browser displays MeSH terms in a hierarchical structure and lets users select terms for searching. In addition, users can add subheadings and limit terms to a MeSH Major Term. If you enter a term that is not a valid MeSH term, the MeSH Browser will check the term against the MeSH Mappings and display the associated MeSH terms.

The screenshot shows the MeSH Browser interface. At the top, there is a search bar with the text 'Search for' and buttons for 'Go' and 'Clear'. Above the search bar are tabs for 'PubMed', 'Nucleotide', 'Protein', 'Genome', 'Structure', and 'PopSet'. Below the search bar, there is a section titled 'About Entrez' and a paragraph explaining that MeSH is NLM's controlled vocabulary used for indexing articles in PubMed.

1. Type term in search box, click “Go.”

The screenshot shows the MeSH Browser search bar with the term 'vibrissae' entered. The 'Go' button is highlighted.

2. If the term is not a valid MeSH heading, you will be asked to select one by highlighting a term and clicking “Browse Term.”
3. The term and its definition will be displayed.

The screenshot shows the MeSH Browser displaying the term 'Vibrissae' with a link to 'Detailed display'. Below the term, the definition is shown: 'Stiff hairs projecting from the face around the nose of most mammals, acting as touch receptors.' At the bottom, there is an 'Add' button and a dropdown menu for selecting an operator, currently set to 'AND'.



4. Click on [Detailed Display] to see hierarchy, possible subheadings and to restrict term to major.

**Vibrissae** [\[Brief display\]](#)

Stiff hairs projecting from the face around the nose of most mammals, acting as touch receptors.

Year introduced: 1985

this term/subheadings to the Search using operator: AND

☐ abnormalities
 ☐ analysis
 ☐ anatomy and histology
 ☐ blood supply
 ☐ chemistry
 ☐ cytology
 ☐ drug effects
 ☐ embryology
 ☐ enzymology
 ☐ growth and development
 ☐ immunology
 ☐ injuries
 ☐ innervation
 ☐ metabolism
 ☐ pathology
 ☐ physiology
 ☐ physiopathology
 ☐ radiography
 ☐ transplantation
 ☐ ultrastructure

☐ Restrict Search to Major Topic headings only  
☐ Do Not Explode this term (i.e., do not include MeSH terms found below this term in the MeSH tree).

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[All MeSH Categories](#)  
[Anatomy Category](#)  
[Animal Structures](#)  
**Vibrissae**

Subheadings to narrow focus of search. Choose as many as needed. Default is all.

Click here to restrict focus to main point.

Hierarchy of MeSH terms

5. To search the term, click “Add” this term. An expanded search box will be displayed. Multiple terms may be browsed and added to the search statement using AND, OR or NOT. When all terms have been chosen and added, click “PubMed Search” to search the terms in the database.

NCBI

[About PubMed](#)

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[Help](#) | [FAQ](#)

[PubMed Services](#)

[Journal Browser](#)

[MeSH Browser](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

vibrissae[MESH] AND Rodentia[MESH]

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**Rodentia** [\[Detailed display\]](#)

A mammalian order which consists of 29 families and many genera.

this term to the Search using operator: AND

L:\Teams\Instruct\Rack Info Sheets\PubMed.doc 05/25/00

NIH Library Helpline 496-1080

## Citation Matcher

The Citation Matcher options allow you to bibliographic information to find the citation or the PubMed ID of any article in the PubMed database.

- **Single Citation Matcher** to look for a single citation. This feature is a fill-in-the-blank form that allows users to enter journal citation information to locate a record for a specific single article, or items indexed from a particular volume or issue of a journal. You do not have to fill in all the blanks.

The screenshot shows the NCBI Citation Matcher for Single Articles interface. The top navigation bar includes links for PubMed, Nucleotide, Protein, Genome, and Structure. The main form area is titled "Citation Matcher for Single Articles" and contains the instruction "Enter information about the article you wish to find." Below this, there are input fields for "Journal:", "Date:", "Volume:", "Issue:", "First page:", and "Author's last name and initials (e.g., Smith BJ)". At the bottom of the form are "Search" and "Clear" buttons. A sidebar on the left contains various links including "About Entrez", "Entrez PubMed", "Entrez Review", "Entrez Help | FAQ", "PubMed Services", "Journal Browser", "eSH Browser", "Single Citation Matcher", and "Batch Citation Matcher".

- **Batch Citation Matcher** allows you to retrieve the PubMed IDs for many articles all at once. This feature requires that you enter the bibliographic information (journal, volume, page, etc.) in a specific format.

The screenshot shows the NCBI Citation matcher interface. The top navigation bar includes links for PubMed, Nucleotide, Protein, Genome, Structure, and PopSet. The main form area is titled "Citation matcher" and contains the instruction "Enter information about the citations you want to find in the [appropriate format](#). The format of the input line is: Journal\_Title|year|volume|first\_page|AuthorName|Your\_key|". Below this, there is a dropdown menu for "Output identifier type:" set to "PubMed". At the bottom of the form is a large text input field for entering the citation information. A sidebar on the left contains various links including "About Entrez", "Entrez PubMed", "Entrez Review", "Entrez Help | FAQ", "PubMed Services", "Journal Browser", "eSH Browser", "Single Citation Matcher", and "Batch Citation Matcher".

- If a single citation is not found, the UID field will contain one of the following:
  - INVALID\_JOURNAL -- The Journal Name you specified is not a known abbreviation. See the [PubMed Journal List](http://www.ncbi.nlm.nih.gov/PubMed/Journals/) (<http://www.ncbi.nlm.nih.gov/PubMed/Journals/>) to find the correct abbreviation for your journal.
  - NOT\_FOUND -- The Journal name is valid, but the rest of the citation information did not match.

- **AMBIGUOUS** -- The information given matches more than one citation. You may be able to find out which citation is the true one by using the [Citation Matcher for Single Articles](http://www.ncbi.nlm.nih.gov/htbin-post/PubMed/wgetcit) (<http://www.ncbi.nlm.nih.gov/htbin-post/PubMed/wgetcit>), which will list the citations matched, unless there are too many.

Input example:

```
PROC NATL ACAD SCI U S A|1991|88|3248|MANN BJ|P32022-1|
PROC NATL ACAD SCI U S A|1991|88|8602|ALDERSON A|Q02723-1|
PROC NATL ACAD SCI U S A|1992|89|10169|CHEN YP|P05106-14|
PROC NATL ACAD SCI U S A|1992|89|3271|GOULD SE|P26261-1|
PROC NATL ACAD SCI U S A|1999|89|3271|GOULD SE|P26261-1|
```

Output for this input:


```
PROC NATL ACAD SCI U S A|1991|88|3248|MANN BJ|P32022-1|91195330
PROC NATL ACAD SCI U S A|1991|88|8602|ALDERSON A|Q02723-1|92020901
PROC NATL ACAD SCI U S A|1992|89|10169|CHEN YP|P05106-14|93066201
PROC NATL ACAD SCI U S A|1992|89|3271|GOULD SE|P26261-1|92228766
PROC NATL ACAD SCI U S A|1999|89|3271|GOULD SE|P26261-1|NOT_FOUND
```

- If you wish to match citations in bulk by e-mail, send email to [citation\\_matcher@ncbi.nlm.nih.gov](mailto:citation_matcher@ncbi.nlm.nih.gov). For instructions, send an message which is empty except for the word "help" in the subject or body.

## Clinical Queries

Clinical Queries mode uses stored strategies called Research Methodology Filters to facilitate evidence based medicine searching. You can precisely locate clinical articles on **therapy**, **diagnosis**, **etiology**, or **prognosis** and can control the breadth or specificity of retrieval. As retrieval is greatly reduced, only use this mode if you are looking for research conducted with specific methodologies. Do not use Clinical Queries mode if you are looking for comprehensive retrieval of all references on a subject.

Clinical Queries Mode is available as a link from the navigation bar on the left.



About Entrez

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About PubMed  
Search  
Overview  
Help | FAQ

PubMed Services  
Journal Browser  
MeSH Browser  
Single Citation  
Matcher  
Batch Citation Matcher  
**Clinical Queries**

Related Resources  
Order Documents  
Grateful Med  
Consumer Health

## PubMed

### Clinical Queries using Research Methodology Filters

This specialized search is intended for clinicians and has built-in search "filters" based largely upon [Haynes RB et al.](#) Four study categories--therapy, diagnosis, etiology, prognosis--are provided, and you may indicate whether you wish your search to be more sensitive (i.e., include most relevant articles but probably including some less relevant ones) or more specific (i.e. including mostly relevant articles but probably omit a few). See [this table](#) for details regarding filtering.

**Indicate the category and emphasis below:**

Category: ☒ therapy ☐ diagnosis ☐ etiology ☐ prognosis

Emphasis: ☐ sensitivity ☒ specificity

**Enter subject search (do not repeat any of the words above):**

NOTE: If you want to retrieve everything on a subject area, you should not use this page. The objective of filtering is to reduce the retrieval to articles that report research conducted with specific methodologies, and retrieval will be greatly reduced.

## LinkOut

This is a service that provides links from PubMed citations to full-text journal articles, biological data, sequence centers, etc. Third parties provide a URL, resource name, brief description of their web site, and then PubMed creates the links to their site.

**LinkOut** provides access for NIH staff to **full-text articles** from PubMed courtesy of NIH Library licenses. The **NIH Library button** on a PubMed record indicates that NIH has full-text access privileges for the journal. In this example, the NIH Library button links to the article in *J Biol Chem*. For the full-text, you must access the Internet via an **NIH IP address**: call the Center for Information Technology at 594-6248 to obtain a Parachute account for access from home.

NIH Staff can access the full text of the article by clicking on this button

Display Abstract Save Text Add to Clipboard

1 : *J Biol Chem* 2000 Jan 28;275(4):2342-8 [Related Articles, Books, LinkOut](#)

full text provided by  
**NIH Library** **JBC ONLINE**

**Erythrocytes possess an intrinsic barrier to nitric oxide consumption.**

**Vaughn MW, Huang KT, Kuo L, Liao JC**

Department of Chemical Engineering, University of California, Los Angeles, California 90095, USA.

[Medline record in process]

It has been reported that free hemoglobin (Hb) reacts with NO at an extremely high rate ( $K(\text{Hb})$  approximately  $10(7) \text{ M}(-1) \text{ s}(-1)$ ) and that the red blood cell (RBC) membrane is highly permeable to NO. RBCs, however, react with NO 500-1000 times slower. This reduction of NO reaction rate by RBCs has been attributed to the extracellular diffusion limitation. To test whether additional limitations are also important, we designed a competition test, which allows the extracellular diffusion limitation to be distinguished from transmembrane

## Other Resources or NCBI Databases

Links to other resources or NCBI databases are available from the buttons to the right of each citation. The following links are available:

**Protein** - Amino acid (protein) sequences from Swiss-Prot, PIR, PRF, PDB, and translated protein sequences from the DNA sequences databases.

**Nucleotide** - DNA sequences from GenBank, EMBL, and DDBJ.

**PopSet** - The PopSet database contains aligned sequences submitted as a set from a population, phylogenetic or mutation study describing such events as evolution and population variation.

**Structure** - The Molecular Modeling Database (MMDB) contains 3-dimensional structures determined by X-ray crystallography and NMR spectroscopy.

**Genome** - Provides access to records and graphic displays of entire genomes and chromosomes for megabase sequences obtained from large-scale sequencing of genomes and chromosomes.